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MANIFESTATIONS OF THE KURDUWADI LINEAMENT BASED ON REMOTE SENSOR DATA INTERPRETATION

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INDEPENDENT investigations, based on aerial photograph and Landsat MSS imagery interpretations, in two widely separated areas, have brought to light very interesting surface manifestations of the geophysically inferred 'Kurduwadi Rift'[1]. Remote sensing based geological studies were carried out in the Late Proterozoic Bhima Group of northern Karnataka and western Andhra Pradesh states, and the associated Precambrian crystalline rocks; in the region bounded by latitudes 16° 15′ N to 17° 30′ N and longitudes 76° 00′ E to 77° 45′ E[2]. Photogeological investigations of the Deccan Traps of the northern parts of the Konkan coastal strip of Maharashtra state were undertaken[3] following reports of reservoir-induced seismicity around Khardi (19° 35′ 13″ N; 73° 22′ 02″ E) in the recent years[4,5].

A major NW-SE trending fault ('A' in figure 1) cuts across the Bhima sediments over a distance of more than 15 km between Chikalur and Gola[6] and is represented by a 250 m wide disturbed zone around Wadi. This fault has brought the crystalline basement rocks in the southwestern upthrown block into direct contact with the tightly folded Bhima limestones, which show dips of up to 80° in the vicinity of the fault zone. Recent field studies have shown the same fault zone to extend more than 15 km further northwestward, north of Farhatabad (on the Gulbarga–Jewargi road, 16 km from Gulbarga); where it is observed as a 100 m wide brecciated zone, flanked by intensely deformed Bhima sediments.

Landsat imagery interpretations suggested a further southeastward extension of this fault lineament through the Precambrian Gneissic terrain ('B' in figure 1). It is represented by a NW-SE trending shear zone around Narayanpet. North and northeast of Yadgir, quartz-veins (currently being quarried) have been emplaced along this shear zone. Further southeastward, the lineament becomes syntaxial with the Raichur schist belt of the western Dharwar craton[7].

The Deccan Trap basaltic flows in the Khardi region of Thana district, ('C' in figure 1) are dissected by a network of lineaments, which show azimuth in the NW-SE direction and a submaxima in the N-S direction. Dykes intruding the basaltic flows are oriented either in the NW-SE or N-S directions. Vertical dislocations of the flows are observed along three of the major NW-SE trending lineaments, while most of the interpreted lineaments represent regional fracture zones and dykes.

The N-S trending Western Ghat escarpment displays a prominent kink, west of Junnar, noticeable not only on the Landsat imageries but also on any of the relevant topographic maps ('D' in figure 1). The Ghod river valley, near Junnar, flows through the Traps which are transected by NW-SE trending megafracture zones. The regional drainage system (of rivers Bhima and Sina) between Junnar and Kurduwadi displays a subparallel, southeastward flow, suggesting implicit structural control over the drainage development. The parallel orientations of the steeper topographic surfaces along this region[8] is significantly consistent.

This linear zone, marking the alignment between the Khardi area and the major fault/shear zone

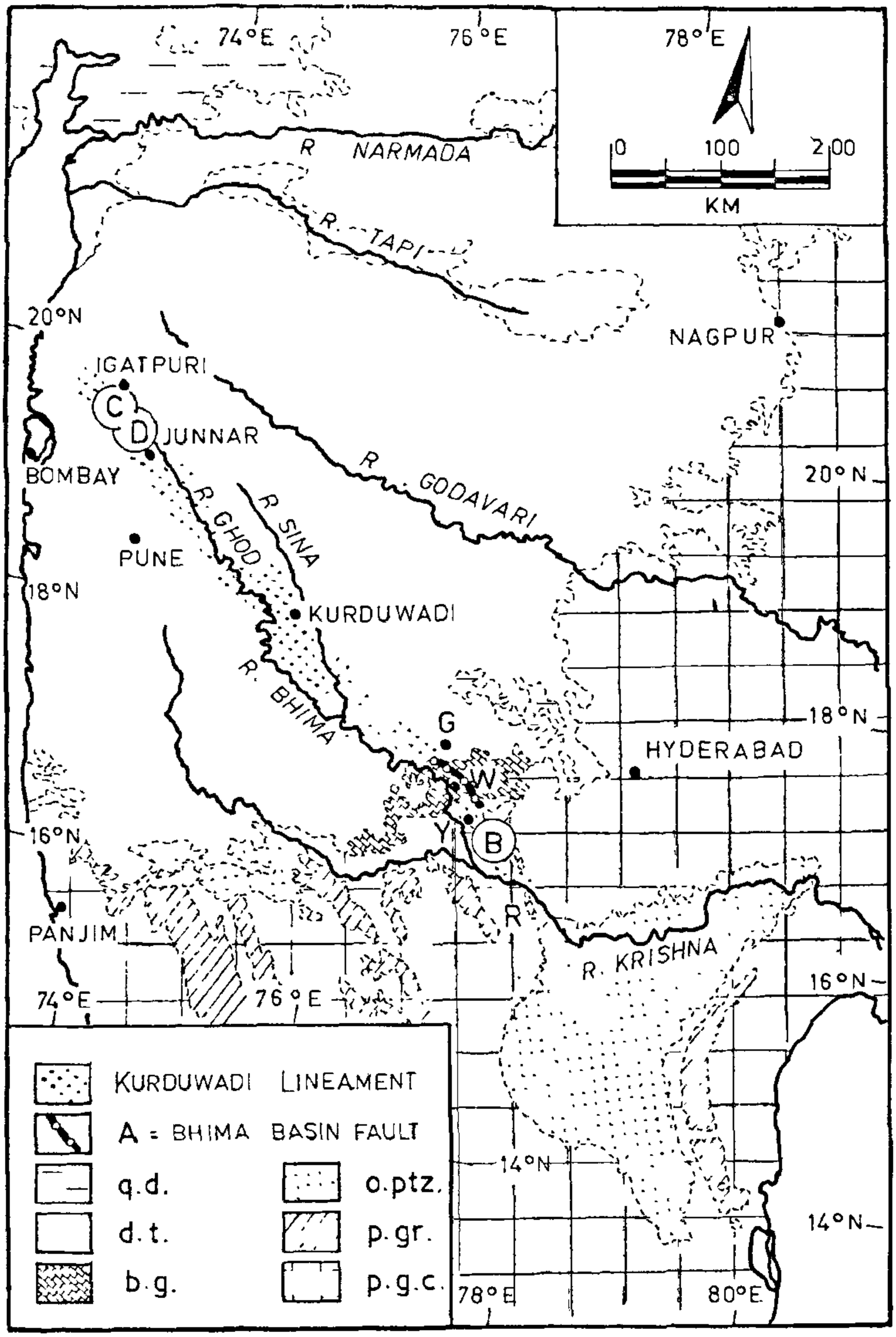

Figure 1. The Kurduwadi Lineament of Peninsular India. [For explanations of **A, B, C** and **D** refer to text. **G,** Gulbarga; **R,** Raichur schist belt; **Y,** Yadgir; **q.d.,** Quaternary deposits and post-Trappean sequences; **d.t.,** Deccan Traps; **b.g.,** Bhima Group; **o.ptz.,** Other proterozoic supracrustal sedimentary sequences; **p.gr.,** Precambrian greenstone belts; **p.g.c.,** Precambrian gneissic complex and other metamorphics.]

associated with the Bhima basin, coincides with the geophysically inferred infra-Trappean rift[1]. This alignment is also consistent with the 'H-6' lineament[9] inferred from Free-air-gravity anomaly patterns.

All these observations and evidences point to the conclusion that the Kurduwadi Lineament is a crustal structure with a prolonged, episodic geological history. Its parallel trend with the Raichur schist belt (more than 2000 Ma. old)[7], suggests a close association between the two, though not very clearly understood at present. The close affiliation of this lineament with the evolution of the supracrustal Bhima basin and the subsequent deformational history of these sediments in the late Proterozoic times is undeniable. The superimposed fracture system on the Deccan Traps recorded along this zone, and its implicit control on the drainage development, stands testimony to a post-Trappean (younger than 60 Ma.) episode of reactivation of this zone.

The area around Khardi is located on the intersection of the Kurduwadi Lineament, with the well known, N-S trending zone of crustal instability along the Konkan coastal strip [9-11]—highlighted by deformed Deccan Traps, geophysical anomalies, intrusives and linear array of hot-springs—which partly coincides with the 'Koyna rift'[1]. The localization of stresses in this intersection zone appears to be a more logical explanation for the recently recorded seismicity around Khardi.

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FORMATION OF PERFECT STAGE OF *RHIZOCTONIA SOLANI* KUHN CAUSING LEAF SPOT AND BOLL ROT OF COTTON

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RHIZOCTONIA SOLANI Kuhn, the imperfect state of *Thanatephorus cucumeris* (Frank) Donk, causes a widespread and destructive disease of cotton (*Gossypium* spp) in India. Because of the wide variation in morphology, pathogenicity and physiology, the taxonomy and nomenclature of *R. solani* have been source of confusion and controversy for many years. Many species of *Rhizoctonia*, viz., *R. endophytica*, *R. fragariae* and *R. callae* are very similar to *R. solani*. For the maximum precision in identification, the perfect stage of the fungus is highly essential. Despite the natural occurrence of the perfect stage on cotton stem[1], no reliable method has been devised yet for inducing perfect stage under controlled conditions. As a result many workers have relied on the vegetative and pathogenic characters of the imperfect stage for identification. It is therefore desirable that every attempt be made to discover perfect stage so that the true relationship of the fungus can be determined.

Attempts were made to induce the development of the teleomorphic stage by growing *R. solani* at 24°C on many media including Marmite potato dextrose agar, potato dextrose agar, Czapek dox agar, water agar and Corn meal agar[2]. The isolate failed to fruit under these treatments. In order to stimulate a more natural environment, petri plates of actively growing colonies were covered with sterile (autoclaved) sand and placed outside the laboratory[3,4]. In addition, a 30-day-old culture on potato dextrose agar medium was added to the soil in earthen pots during the first week of December 1987.